

Brian W. Martin

Institute of Sport Sciences, Federal Office of Sports, Magglingen, Switzerland

Physical activity related attitudes, knowledge and behaviour in the Swiss population: comparison of the HEPA Surveys 2001 and 1999

Summary

Introduction: The importance of regular physical activity for health is well recognised, and estimations have shown its economic relevance for Switzerland. Nevertheless the Swiss Health Surveys 1992 and 1997 have shown an increase in the proportion of physically inactive individuals of about 4 percent. The HEPA Survey 1999 has made a first attempt to measure attitudes, knowledge and behaviour relative to the current minimal recommendations for health-enhancing physical activity HEPA in the Swiss population. The HEPA Survey 2001 was conducted to explore whether the increase in inactivity has already come to a standstill and to deliver a quantitative estimate of the risk for accidents depending on habitual physical activity patterns.

Methods: A computer assisted telephone interview CATI was carried out in women and men of at least 15 years of age from July to September 2001. In a random-random-procedure sub-samples of comparable size were drawn for the German, French and Italian speaking parts of Switzerland. In order to attain representative prevalence data, the results were weighted to the language region, age, gender and household size distribution of the Swiss population. Items from the HEPA Survey 1999 were used to directly describe and inquire about target behaviours for both moderate and vigorous intensity activities. In addition, new questions assessed the number of days in a week with activities in the respective intensities and – in a second step – the average duration of these activities.

Results: 1535 interviews were carried out, resulting in a participation of 56.3%. 91.2% of all study participants considered physical activity very or at least rather important for health, 16.9% were aware of the current minimal recommendations for health-enhancing physical activity (half an hour daily with at least moderate intensity). 36.6% reported less activity than described by these minimal recommendations and were considered inactive, 25.3% were active in the sense of the recommendations (but did not exercise regularly), and 38.1% reported vigorous intensity exercise at least 3 times a week for 20 minutes. Compared to the HEPA Survey 1999, only the increase in knowledge about the minimal HEPA criteria represented a significant change (1999: 12.6%; $p = 0.037$). According to the new physical activity items, the proportion of physically inactive individuals was 57.8%, the proportion of individuals with activities of moderate intensity on at least five days of the week for an average duration of 30 minutes was 11.2%, the prevalence of at least 3 days of the week and 20 minutes exercising with vigorous intensity was 31.0%. The percentage of individuals reporting any accident during the last year did not differ significantly between the activity classes according to the HEPA Survey 1999 items (7.3% in inactive; 9.3% in active; 9.8% in trained individuals). The incidence was estimated to be 3.5 accidents per 10 000 hours of activities with at least moderate intensity in habitually inactive people, 1.7 in active and 1.9 in trained individuals, with the differences between the inactive and each of the other two groups reaching the level of statistical significance ($p = 0.002$; $p = 0.003$).

Zusammenfassung

Bewegung und Gesundheit: Einstellung, Wissen und Verhalten der Schweizer Bevölkerung in den Bewegungssurveys 2001 und 1999

Einleitung: Die Bedeutung der körperlichen Aktivität für die Gesundheit ist wissenschaftlich breit abgestützt, erste Schätzungen haben auch die grosse volkswirtschaftliche Relevanz der Gesundheitseffekte von körperlicher Aktivität für die Schweiz aufgezeigt. Nachdem zwischen den schweizerischen Gesundheitsbefragungen 1992 und 1997 noch eine Zunahme des Anteils der körperlich Inaktiven um 4 Prozentpunkte zu beobachten war, wurden 1999 erstmals Einstellung, Wissen und Verhalten der Schweizer Bevölkerung bezüglich der aktuellen Mindestempfehlungen für gesundheitswirksame Bewegung untersucht. Der Bewegungssurvey 2001 hatte das Ziel zu überprüfen, ob sich Hinweise auf eine Trendumkehr bereits abzeichnen, und eine erste quantitative Abschätzung des Unfallrisikos vor dem Hintergrund des habituellen Bewegungsverhaltens zu liefern.

Methoden: Von Juli bis September 2001 wurde eine computer-gestützte Telefonbefragung von Frauen und Männern ab 15 Jahren mit drei gleich grossen Teilstichproben in Deutschschweiz, Romandie und Tessin durchgeführt. Um repräsentative Prävalenzdaten für die Schweizer Bevölkerung zu erhalten, wurden in die Analysen Landesteil, Alter, Geschlecht und Haushaltsgrösse als Gewichtungsfaktoren mit einbezogen. Zusätzlich zu den Fragen aus dem Bewegungssurvey 1999, die das Zielverhalten bezüglich Mindestempfehlungen und Ausdauertraining direkt beschreiben und danach fragen, ob es erreicht wird, wurden auch Fragen verwendet, die in einem ersten Schritt die Anzahl von Tagen pro Woche mit Aktivitäten in der entsprechenden Intensität erfassen und in einem zweiten Schritt die durchschnittliche Dauer dieser Aktivität festhalten.

Resultate: Es wurden 1535 Interviews durchgeführt, was einer Ausschöpfung von 56.3% entspricht. 91.2% hielten Bewegung für sehr oder ziemlich wichtig für die Gesundheit, 16.9% kannten die geltenden Mindestkriterien für gesundheitswirksame Bewegung (eine halbe Stunde täglich mit mindestens mittlerer Intensität). 36.6% gaben an, sich nicht in diesem Mass zu bewegen, und gelten damit als inaktiv; 25.3% berichteten Aktivität im Rahmen der Mindestempfehlungen (aber kein sportliches Training); weitere 38.1% absolvieren ein sportliches Training vom Ausdauer-typ. Im Vergleich mit dem Bewegungssurvey 1999 war einzig bei der Kenntnis der Mindestempfehlungen ein signifikanter Unterschied zu beobachten (1999: 12.6%; $p = 0.037$). Bei der Verwendung der neuen Bewegungsfragen lagen der Anteil der Inaktiven bei 57.8%, der mit mindestens fünf Tagen pro Woche mit 30 Minuten Bewegung mit mittlerer Intensität bei 11.2% und der mit mindestens 3 Tagen pro Woche mit 20 Minuten Aktivitäten mit hoher Intensität bei 31.0%. Der Anteil von Personen, die über einen Unfall im letzten Jahr berichten, zeigte keine signifikanten Unterschiede zwischen den Aktivitätsgruppen nach den Definitionen des Bewegungssurvey 1999 (7.3% bei Inaktiven; 9.3% bei Aktiven; 9.8% bei Trainierten). Die geschätzten Unfallinzidenzen lagen bei den

Discussion: No indication can be seen of a further increase in inactivity since the HEPA Survey 1999. The results of the much larger and therefore more precise Swiss Health Survey 2002 – which will be available in 2004 – will confirm whether this already represents the turning point in the epidemic of sedentariness in Switzerland. The first analyses of the new physical activity items also in use in the Swiss Health Survey 2002 could indicate that the HEPA Survey 1999 has rather underestimated the scale of inactivity in Switzerland. Though some methodological aspects need to be considered, there does not seem to be any indication that the increased exposure time in both active and trained individuals is associated with a higher cumulative risk for accidents. When taking into account the actual exposure time through physical activity, it seems the risk per time unit in active and trained people is only about half the one in habitually inactive individuals.

habituell Inaktiven bei 3.5 Unfällen pro 10 000 Stunden Aktivität mit mindestens mittlerer Intensität, bei den Aktiven bei 1.7 Unfällen und bei den Trainierten bei 1.9 Unfällen, wobei die Unterschiede zwischen den Inaktiven und den anderen beiden Gruppen das statistische Signifikanzniveau erreichten ($p = 0.002$; $p = 0.003$).

Diskussion: Im Vergleich zum Bewegungssurvey 1999 ergeben sich keine Hinweise auf eine weitere Zunahme des Anteils der körperlich Inaktiven. Ob diese Beobachtung bereits dem erhofften Stillstand der «Epidemie des Sitzens» in der Schweiz entspricht, wird der im Jahr 2004 mögliche Vergleich zwischen den breiter abgestützten und daher präziseren Daten der Schweizerischen Gesundheitsbefragungen SGB 2002 und 1997 zeigen. Erste Auswertungen der auch in der SGB 2002 verwendeten neuen Bewegungsfragen weisen darauf hin, dass mit dem Bewegungssurvey 1999 das Ausmass der körperlichen Inaktivität in die Berechnungen mit einbezogen, zeigt sich, dass das Risiko pro Zeiteinheit bei Aktiven und Trainierten nur etwa halb so gross wie bei Inaktiven ist.

Schweizerische Zeitschrift für «Sportmedizin und Sporttraumatologie» 50 (4), 164–168, 2002

Introduction

The importance of physical activity for health is well established and estimates for the economic effects of these associations have been published for Switzerland [1]: According to these estimates, the current physical activity of a majority of the Swiss population already prevents 2.3 million cases of disease, a good 3300 deaths and saves direct treatment costs of 2.7 billion Swiss francs (1.8 billion Euro) a year. According to the conservative assumptions of the study, the inadequate physical activity prevailing amongst a good third of the population is responsible for 1.4 million cases, almost 2000 deaths and direct treatment costs of 1.6 billion Swiss francs (1.1 billion Euro) annually.

In Switzerland, the political interest in physical activity and therefore the need to monitor changes on the population level has risen considerably. The «Action Plan Environment and Health» of the Federal Office for Public Health and the Swiss Agency for the Environment, Forests and Landscape has set the target of an «an increase in the proportion of non-motorized mobility» in 1997 already, the «Swiss Federal Government's Concept for a National Sports Policy» in 2000 and the respective measures defined in 2002 [2] have as their first main objective «more physically active people», and a «Guideline for the Promotion of Non-Motorised Traffic» with the explicit objective to promote walking, cycling and inline-skating has been issued in late 2002 by the Swiss Federal Department of Environment, Transport, Energy and Communications. The recognition of physical activity is also highlighted by the fact that it has been chosen as an exemplary indicator for health habits in the Swiss Monitoring System for Sustainable Development MONET [3].

The physical activity patterns of the Swiss population are being monitored systematically since the Swiss Health Survey 1992 [4], using an item on sweat episodes in physical activities during leisure time [5]. A secondary analysis of the respective items in the Swiss Health Survey 1997 has shown an increase of individuals reporting less than one day per week with vigorous intensity activities during leisure time from 35.7% to 39.4% since 1992 [6]. In 1999 the first HEPA survey with 1529 interviews was carried out in order to describe physical activity behaviour in the Swiss population with respect to the current minimal recommendations for health-enhancing physical activity HEPA (half an hour physi-

cal activity daily of at least moderate intensity) and to the recommendations for cardio-respiratory fitness training (vigorous intensity exercise at least 3 times per week for 20 minutes) and has established the «rule of thumb» for physical activity in Switzerland: $\frac{1}{3}$ inactive, $\frac{1}{3}$ active in the sense of the minimal recommendations, $\frac{1}{3}$ trained in the sense of a cardio-respiratory fitness training [7, 8]. The Swiss Health Survey 2002 of the Swiss Federal Office of Statistics is currently being conducted in about 20 000 participants, including for the first time physical activity items on moderate intensity activities. The new items that were recommended for use in the Swiss Health Survey are not identical with the ones in the HEPA Survey 1999, but consist of a set of questions assessing activities of both moderate and vigorous activity in a two-step-procedure and providing a continuous measure of physical activity. Though clearly inferior to an extensive physical activity frequency questionnaire in their measurement characteristics [9], both questionnaires have shown acceptable results in a recent validation study [10].

The risks associated with activity and sport in particular can be expressed in economic terms as well [1]: there are about 300 000 sporting accidents a year – affecting not only those who are sufficiently active but also those who are irregularly and insufficiently active – causing 160 deaths and incurring direct treatment costs of 1.1 billion Swiss francs (0.7 billion Euro). The total number of all accidents in Switzerland is about 970 000 per year, resulting in 1880 deaths and direct treatment costs of 4.6 billion Swiss francs (3.1 billion Euro).

These figures highlight the need for the continuing development of targeted accident prevention measures, but do not speak against HEPA promotion. There is even some preliminary evidence from Switzerland supporting the hypothesis that individuals not regularly active or out of practice, and thus poorly prepared for sporting activity, are at higher risk for sport accidents [11].

It was therefore the aim of this study to investigate changes in physical activity related attitudes, knowledge and behaviour in the Swiss population in comparison to the HEPA Survey 1999, to assess the prevalence of physical activity in the same sample using the new items introduced to the Swiss Health Survey 2002 and to quantify the risk for all accidents and sport accidents with respect to the habitual physical activity patterns.

Methods

The questionnaire contained the items from the HEPA Survey 1999 [7] including an algorithm assessing the stages of changes of the transtheoretical model [12] for half an hour physical activity daily with at least moderate intensity and three times twenty minutes of activities of vigorous intensity as respective target behaviours.

In addition, two sets of questions were used to assess activities of both moderate and vigorous activity in a two-step-procedure (on how many days per week; with what average duration) and providing a continuous measure of physical activity. The intention to become more physically active within the next six months and within the next month as well as the duration since the introduction of the current activity behaviour were also assessed and the study participants were asked about all accidents and in particular about sport accidents during the last year before the interview. The German version of the questionnaire was pre-tested in 10 individuals, but no adaptations were necessary.

A computer assisted telephone interview CATI was carried out by the LINK institute in Lucerne. In a random-random-procedure sub-samples of comparable size were drawn for the German, French and Italian speaking parts of Switzerland. The 3300 telephone numbers drawn corresponded to 2725 actual addresses to be contacted. All households identified received an explanatory letter and were contacted between July 24 and September 25 2001. In the second randomisation step members of the households of more than 15 years of age were selected. In order to attain representative prevalence data, the results were weighted according to the language region, age, gender and household size distribution in the Swiss population. Due to the weighting procedure the total numbers in some of the calculations (for example in the accidents) may slightly differ from the original figures.

The statistical analyses were carried out using the survey functions of the Stata 6.0 software package [13].

Results

1535 interviews could be carried out, resulting in a participation of 56.3% which was between 55.0% and 58.3% in all three linguistic regions. 34.3% of all interviews failed on the household level (9.2% not reached; 15.7% unable to participate for language or other reasons; 9.4% declined to participate), 9.4% on the individual level (3.2% not reached; 2.4% unable to participate; 3.8% declined to participate). 75 individuals reported not being able to walk more than 200 metres on their own and were excluded from further analyses.

For 91.2% (95% confidence interval: 88.7%; 93.1%) of the interviewed physical activity was very important or rather important for health, this figure was not statistically different from the one in 1999 (93.3%, $p = 0.110$). The percentage of individuals able to choose correctly both the amount and the intensity for the current minimal HEPA recommendations from a list of 5 and 4 options respectively was 16.9% (14.2%; 20.1%), significantly higher than the 12.6% in 1999 ($p = 0.037$).

The percentage with no sweat episodes in physical activity during leisure time was 28.6% (25.5%; 31.9%), slightly down from 32.1% in 1999 ($p = 0.141$).

52.1% (48.3%; 55.9%) of the study participants answered to the HEPA Survey 1999 items in the sense of being active according to the current minimal recommendations. Another 11.9% (9.8%; 14.3%) did not report to comply with these criteria, but with the recommendations for cardio-respiratory fitness training. Therefore the proportion of individuals at least active was 63.4% (59.8%; 66.9%), the proportion of inactive persons was 36.6% (33.1%; 40.2%). This figure was not significantly different from the 37.1% in 1999 ($p = 0.856$). The distribution of the stages of change of the transtheoretical model is shown in *table 1*. There again, the difference to the distribution in 1999 was not statistically significant.

38.1% (95% confidence interval: 34.5%; 41.9%) of all subjects reported activities of vigorous intensity at least 3 times per week with a duration of 20 minutes in the HEPA Survey 1999 items, while 25.3% (22.1%; 28.8%) were active in the sense of the minimal recommendations, but not according to the vigorous criteria. Again, the proportion of individuals trained in the sense of a cardio-respiratory fitness training did not differ significantly from the one in 1999 (37.3%; $p = 0.676$).

6.6% (4.9%; 8.9%) indicated to do a strength training once a week, 12.6% (10.3%; 15.3%) twice or more (1999: 6.0% and 15.0%; $p = 0.459$). When the analysis was restricted to the actual recommendations of two sessions per week and only to people who did at least one training in a fitness centre (and were therefore more likely to have an understanding of strength training corresponding to the actual recommendations), the proportion was only 5.2% (3.8%; 7.0%), significantly lower than in 1999 (8.5%; $p = 0.016$). In the age group from 50 years on, where strength training is specifically recommended, the percentage was only 2.5% (1.3%; 4.7%). Due to the small numbers, this figure was not significantly different from 1999 (4.1%; $p = 0.249$). The percentage with two flexibility trainings per week was 34.5% (31.0%; 38.2%), very near to the one in 1999 (35.4%, $p = 0.738$). A training of endurance (3 times per week 20 minutes), strength (2 sessions per week, of which at least one in a fitness centre) and flexibility (2 sessions per week) was reported from 3.4% (2.3%; 5.1%) of the study participants, slightly down from the 4.4% in 1999 ($p = 0.341$).

Stages of change	Survey 1999	Survey 2001
Maintenance	57.7% (54.0%; 61.4%)	57.0% (53.3%; 60.6%)
Action	5.4% (3.9%; 7.4%)	6.4% (4.8%; 8.5%)
Preparation	28.5% (25.4%; 31.9%)	29.2% (26.0%; 32.8%)
Contemplation	2.3% (1.5%; 3.5%)	1.9% (1.3%; 2.8.3%)
Pre-contemplation	6.1% (4.8%; 7.8%)	5.5% (4.3%; 68.8%)

Items SHS02 + intention/hab.	Survey 2001
Active since >6 months	27.5% (24.2%; 31.1%)
Active, change since <6 months	14.7% (12.1%; 17.7%)
Inactive intention < 1 month	9.3% (7.3%; 11.8%)
Inactive intention 1-6 months	6.1% (4.6%; 8.0%)
Inactive no intention	42.4% (38.8%; 46.2%)

Table 1: Percentage estimates and 95% confidence intervals for the stages of change according to the transtheoretical model in the HEPA Surveys 1999 and 2001 and pseudo-stages according to the items from the Swiss Health Survey 2002 plus the complementary items on intention to become more active and on the habitualness of physical activity (pre-contemplation: inactive and no intention to become active; contemplation: inactive with intention to become active; preparation: active, but not meeting the recommendations; action: meeting the moderate intensity or vigorous intensity recommendations since up to half a year; maintenance: meeting the recommendations since half a year or more). The prevalences were weighted for language region, age, gender and household size. The stages of change distribution was not significantly different between 1999 and 2001 ($p = 0.823$), the distribution became even more similar, when the 1999 prevalences were recalculated with the 2001 weights ($p = 0.897$).

An interesting finding of the 1999 Survey had been that 49.5% of all inactive individuals (according to recommendations) assumed to be sufficiently active for their health. This figure has slightly decreased ($p = 0.307$) to 45.3% (95% confidence interval: 39.5%; 51.2%).

The weights used in the HEPA Survey 2001 were derived from recently updated demographic data about the language region, age and gender distribution in the Swiss population and therefore differed slightly from the weights in the 1999 survey that were based on data from 1995. In order to avoid any bias introduced by different assumptions about the demographic structure of the population under study, all prevalences in the 1999 data were recalculated using the 2001 weighting factors. The differences between the two surveys tended to become rather smaller (individuals with less than one sweat episode in 1999: 31.2%; in 2001: 28.6%; inactive people according to the moderate and the vigorous criteria in 1999: 36.1%; 2001: 36.6%). Nevertheless the differences in knowledge about the recommendations (1999: 12.4%; 2001: 16.9%, $p = 0.032$) and in strength training (two sessions in fitness centre in 1999: 8.9%; 2001: 5.2%, $p = 0.008$) remained statistically significant.

According to the new physical activity items also used in the Swiss Health Survey 2002, 23.5% (95% confidence interval: 20.4%; 27.0%) met the minimal recommendations of 5 days per week of moderate intensity activities with an average duration of 30 minutes. Another 18.7% (15.8%; 21.9%) did not report to meet these criteria, but at least 3 days per week of vigorous intensity activities with an average duration of 20 minutes, leaving 57.8% (54.0%; 61.5%) inactive people according to the new items. The additional items on the intention to become more active and on the habitualness of the activity behaviour allowed a more detailed description as seen in *table 1*.

31.0% (27.4%; 34.7%) of the subjects reported at least 3 days per week of vigorous intensity activities with an average duration of 20 minutes, another 11.2% (9.2%; 13.7%) did not meet these criteria, but reported at least 5 days per week of moderate intensity with an average duration of 30 minutes.

111 individuals reported 112 accidents. 65 of them were treated in a physicians practice or an outpatients' practice, 34 in a hospital ward. 87 individuals were at least one day off work. A total of 34 sport accidents was reported (19 treated as out-patients, 11 in a hospital ward, 25 with at least one day off work).

The proportion reporting any accident during the last year was not significantly different between individuals deemed as inactive, active or trained according to the HEPA 1999 items (7.3%; 9.3%; 9.8%; $p = 0.594$). The same was the case for sport accidents (3.1%; 2.7%; 3.2%; $p = 0.954$) and also when the active and the trained were collapsed into one category ($p = 0.290$ for all accidents; $p = 0.936$ for sport accidents).

From the new physical activity items cumulative weekly physical activity for both at least moderate intensity and vigorous inten-

sity could be calculated and extrapolated to a yearly exposure. Based on the assumption that physical activity was comparable before and after the accident, the incidences in *table 2* were calculated.

Discussion

The comparison between most indicators of physical activity related attitudes and behaviour have shown practically no changes between the HEPA Surveys 1999 and 2001. An increase was seen in the knowledge about the current minimal recommendations, a decrease in the proportion of individuals meeting the recommendations for strength training. When using the new items for physical activity from the Swiss Health Survey 2002, more than half of the population was considered to be inactive. About one fifth of this group had the intention to become more active within the next month, another tenth had the intention to do so within the next six months. The cumulative incidence for both, all accidents and sport accidents was comparable in inactive, active and trained individuals according to the HEPA Survey 1999 items. For all accidents, the incidence per hours of at least moderate intensity activities was about twice higher in inactive people compared to active or trained individuals, for sports accidents the respective factor was almost 3. When calculating the incidences for vigorous intensity activities, a trend towards further differences between active and trained individuals could be observed.

Though the validity of short questionnaires compared with physiological parameters is limited [10] and there was a seasonal difference of 3 months between the HEPA Surveys 1999 (April to June) and 2001 (July to September), the stability of virtually all physical activity indicators is surprisingly good on the population level. In a sensitivity analysis potential confounding by differing weighting procedures could be excluded. Also the proportion of individuals with less than one day per week with sweat episodes during leisure time activities is practically unchanged. Taking into account the conclusion from the Health Survey 1992 that the summertime prevalence for this indicator can well be about 5% lower than the whole year average [4], the values from both HEPA Surveys are well within the range of the ones from the Swiss Health Survey 1997. The results of the much larger and therefore more precise Swiss Health Survey 2002 – which will be available in 2004 – will confirm whether this already represents the turning point in the epidemic of sedentariness in Switzerland.

Some of the indicators not included in the Swiss Health Survey have shown changes between 1999 und 2001. So the increase in knowledge about the criteria of the minimal HEPA recommendations by about 4% could represent an increase in media awareness on the subject and the first results of campaign activities particularly by the foundation Health Promotion Switzerland. The decrease in the proportion of individuals meeting the recommen-

	Any accidents/10'000 hours of at least moderate intensity activity	Any accidents/10'000 hours of vigorous intensity activity
Trained	1.9	4.2
Active	1.7	6.9
Inactive	3.5	9.3
	active vs. trained: $p=0.652$	active vs. trained: $p=0.027$
	inactive vs. trained: $p=0.003$	inactive vs. trained: $p=0.000$
	inactive vs. active : $p=0.002$	inactive vs. active : $p=0.176$
	Sport accidents/10'000 hours of at least moderate intensity activity	Sport accidents/10'000 hours of vigorous intensity activity
Trained	0.6	1.4
Active	0.5	2.0
Inactive	1.5	4.0
	active vs. trained: $p=0.595$	active vs. trained: $p=0.353$
	inactive vs. trained: $p=0.009$	inactive vs. trained: $p=0.002$
	inactive vs. active : $p=0.004$	inactive vs. active : $p=0.074$

Table 2: Incidences for all accidents and sport accidents in inactive, active or trained subjects according to the HEPA 1999 items. The incidences were weighted for language region, age, gender and household size.

dations for strength training is more difficult to interpret in view of the small numbers involved and potential seasonal effects.

The substantially higher prevalence of inactivity according to the new items from the Swiss Health Survey 2002 could indicate that this instrument is less obvious and therefore less prone to the effects of social desirability than the Survey 1999 items [8]. If these prevalences are confirmed, they will necessitate the use of other cut-off points and additional items not included in the Swiss Health Survey (for example on intentions for behavioural change) in order to achieve meaningful segmentations and descriptions of the population and to allow the monitoring of changes potentially preceding actual changes in behaviour. The Swiss Health Survey 2002 is by its nature restricted in the number and range of physical activity items, but it is much larger, due to its multidisciplinary character much more immune against issues of social desirability, and is covering not only a few months, but all seasons of a calendar year. Therefore this survey will be able to confirm whether the scale of physical inactivity has been massively underestimated by the HEPA Survey 1999.

If this were the case, the estimations for the economic benefits of the health-enhancing effects of physical activity for Switzerland would have to be revised. An important point in these estimates are also sports accidents. The accident data from the HEPA Survey 2001 have a number of methodological limitations, its most important one being the cross-sectional nature of the study design. In order to calculate incidence estimates, the assumption has to be made (and can not be verified) that physical activity behaviour was identical before and after the accident. In addition, the small number of cases limits the precision of the estimates and does not allow any stratification of the analyses by subgroups or by type of injury. Nevertheless the data suggest that greater physical activity is not necessarily associated with an increase in cumulative risk for both any accidents or sport accidents and that a habitually higher activity pattern is associated with a decreased incidence for any accidents or in an even more pronounced way for sport accidents. When considering the exposure to potentially more dangerous activities of vigorous intensity, the protective effect seems to be of a similar magnitude and there might even be a trend towards additional protection in trained individuals. The implications for the promotion of regular physical activity, also in the prevention of accidents, have to be confirmed in larger, ideally longitudinal or even interventional studies and using other definitions of habitual activity.

The encouraging observations about the development of physical activity have to be confirmed and the actual extent of inactivity in the Swiss population has to be assessed by the Swiss Health Survey. Studies like the HEPA surveys have an important role in exploring physical activity behaviour and intentions in more detail, in testing new methods of assessment and in providing additional short term monitoring in this important dimension of health behaviour.

Acknowledgement

The author wishes to thank Peter Grau and Alexandra Egli from LINK Institute for the good collaboration and Eva Martin-Diener for her critical review of the manuscript.

Address for correspondence:

Brian Martin, MD MPH, Health Promotion, Institute of Sport Sciences, Federal Office of Sports FOSPO, CH-2532 Magglingen, Switzerland, Tel: ++41 32 327 62 38, Fax: ++41 32 327 64 05
E-mail: brian.martin@baspo.admin.ch

References

- 1 Martin B.W., Beeler I., Szucs T., Smala A.M., Brügger O., Casparis C., Allenbach R., Raeber P.A., Marti B.: Economic benefits of the health-enhancing effects of physical activity: first estimates for Switzerland. Scientific position statement of the Swiss Federal Office of Sports, Swiss Federal Office of Public Health, Swiss Council for Accident Prevention, Swiss National Accident Insurance Organisation (SUVA), Department of Medical Economics of the Institute of Social and Preventive Medicine and the University Hospital of Zurich and the Network HEPA Switzerland. Schweiz. Z. Sportmed. Sporttraumatol., 2001; 49(3): 131–133.
- 2 Anonymus: Allgemeine Bewegungs- und Sportförderung. Sportpolitik. Informationen aus dem öffentlich-rechtlichen Sport 2002; 2 (Sonderausgabe Sportpolitisches Konzept – Umsetzungsmassnahmen): 3–7.
- 3 Swiss Federal Statistical Office (SFSO), Swiss Agency for the Environment, Forests and Landscape (SAEFL), Federal Office for Spatial Development (ARE): Measuring Sustainable Development. Insights into MONET – the Swiss monitoring system. Neuchâtel, SFSO/SAEFL/ARE, 2002.
- 4 Calmonte R., Kälin W.: Körperliche Aktivität und Gesundheit in der Schweizer Bevölkerung. Eine Sekundäranalyse der Daten aus der Schweizerischen Gesundheitsbefragung 1992. Berne, Institute for Social and Preventive Medicine, 1997.
- 5 Sequeira M.M., Rickenbach M., Wietlisbach V., Tullen B., Schutz Y.: Physical activity assessment using a pedometer and its comparison with a questionnaire in a large population survey. Am. J. Epidemiol. 1995; 142(9): 989–999.
- 6 Lamprecht M., Stamm H.P.: Physical activity, sports and health in the Swiss population Secondary analysis of data collected through the 1997 Swiss health questionnaire conducted on behalf of the Swiss Federal Office for Sports. Executive Summary. Zürich, L&S Sozialforschung und Beratung AG, 2000.
- 7 Martin B., Mäder U., Calmonte R.: Einstellung, Wissen und Verhalten der Schweizer Bevölkerung bezüglich körperlicher Aktivität: Resultate aus dem Bewegungssurvey 1999. Schweiz. Z. Sportmed. Sporttraumatol. 1999; 47(4): 165–169.
- 8 Martin B.W., Mäder U.: Körperliches Aktivitätsverhalten in der Schweiz. In: Samitz G., Mensink G. (Hrsg.), Körperliche Aktivität in Prävention und Therapie. Evidenzbasierter Leitfaden für Klinik und Praxis. München: Marseille Verlag GmbH, 2002.
- 9 Bernstein M., Sloutskis D., Kumanyika S., Sparti A., Schutz Y., Morabia A.: Databased Approach for Developing a Physical Activity Frequency Questionnaire. Am. J. Epidemiol. 1998; 147: 147–154.
- 10 Mäder U., Martin B., Schutz Y., Marti B.: Validation study of short physical activity questionnaires, based on accelerometry. Abstract. In: Miilunpalo S., Tulimäki (ed.), International Symposium on Health-Enhancing Physical Activity (HEPA). Evidence-based Promotion of Physical Activity. Helsinki, Finland, September 1-2, 2002. Book of Abstracts. Tampere: UKK Institute, 2002: 67.
- 11 Marti B., Hättich A.: Verletzungen. In: Bewegung – Sport – Gesundheit: Epidemiologisches Kompendium. Berne: Verlag Paul Haupt, 1999: 217–248.
- 12 Marcus B.H., Selby V.C., Niaura R.S., Rossi J.S.: Self-efficacy and the stages of exercise behaviour change. Research Quarterly for Exercise and Sport 1992; 63: 60–66.
- 13 StataCorp. Stata Statistical Software: Release 6.0. College Station, TX: Stata Corporation, 1999.